2005

The Information Commons: New Pathways to Digital Resources and Knowledge Management

Robert A. Seal
Loyola University Chicago, rseal@luc.edu

THE INFORMATION COMMONS: NEW PATHWAYS TO DIGITAL RESOURCES AND KNOWLEDGE MANAGEMENT

Robert A. Seal, Dean of the Library
Texas Christian University
Fort Worth, Texas, USA

[Abstract]

No longer an innovation, the information commons has become a mainstream approach in U.S. academic libraries for providing convenient access to technology and online resources, the first step for many university students in their own knowledge management. From the very basic model of a well-equipped computer lab to more elaborate projects involving multiple campus departments, extensive digital resources, and spaces for knowledge creation, the information commons can facilitate the integration of the college and university library into the academic learning process. After a brief overview of the changing library environment, the paper provides a look at the various models and characteristics of the information commons and then focuses on the integrated model involving partnerships with computer centers and other information units. Successful implementation and operation present a number of challenges and the author makes a case for careful planning, the involvement of stakeholders, regular assessment, and periodic revision of format, organization and services. The author concludes with an examination of the information commons' role in knowledge management and a look to the future.

I. Introduction.

The last decade has witnessed a number of major trends in academic libraries in the United States and elsewhere in the world. Among these are web-based services; the growing availability of e-content; the transformation of facilities by incorporating the comfort features of large chain bookstores; 24-hour service; and most recently, the creation of institutional repositories. But one of the most significant trends in college and university libraries in recent years has been the information commons, a new model of service which has changed the way librarians view patron services and which has facilitated the integration of the academic library into the learning process. The information commons (IC) can take on a variety of configurations, all of which have strikingly similar goals: to provide one-stop shopping for a variety of information services; to foster information literacy; and to facilitate research and learning, especially by undergraduates.

An innovation in the early 1990's, the information commons has become a mainstream approach for providing convenient access to technology, digital resources, and information specialists while playing a critical role in the development of knowledge management skills for university students. In short, the IC is an essential part of today's academic library environment, often the most popular service and space in college and university libraries large and small. Indeed, in many cases, it is the single most important reason for the recent resurgence in on-site use in U.S. academic libraries.

This paper provides an overview of the information commons phenomenon, its models, advantages, and challenges. Because successful implementation and operation require careful planning, a case is made for the involvement of stakeholders, regular assessment, and periodic revision of format, organization, and services. The author includes descriptions of the information commons at his home institution of Texas Christian University (TCU) to illustrate certain points made in the paper. Finally, the role of the information commons in the growth of knowledge management skills is discussed.

II. The changing library environment and the information commons

Despite some evidence of declining on-site library use (Carlson, 2001), in general academic libraries are booming. True, the number of reference questions has diminished almost universally in recent years and many libraries have seen a drop in circulation, but gate counts are up dramatically on many campuses. Why do students now fill academic libraries most days of the year, not only during final exams as in the past? To read, study, relax, and get help as they always have. But today they also come to check e-mail, surf the Web, play games, have a cup of coffee, write papers, and listen to their MP3 players, often simultaneously. And they also come the library to be with other people, their friends, classmates, and

professors, to interact and exchange ideas. Fister (2004) noted that libraries have always been community places, formerly spaces for quiet contemplation, but now much noisier: "The enduring value of the library as a cultural meeting place is taking on a more extroverted character as libraries realize how potent that social element can be in fostering learning" (p. 1). Indeed, the information commons has become a focal point for that social interaction and resultant learning. Carole Wedge, an architect observed "there's a longing for spaces in which to come together and be inspired...something you don't get from a laptop in Starbucks" (Morris, 2002, p. 27). This need for contact with people is one of the reasons for the success of the information commons, a vibrant community within the academic library.

Changes in learning styles and pedagogy in recent years have resulted in more group projects and team activities, requiring academic libraries to create spaces for collaborative study and learning (Fister, 2004, p. 3). Such spaces are central to the information commons which attempts to accommodate different research and learning styles. Group study rooms and tables, individual and group carrels, multi-person computer workstations, and flexible furniture arrangements are just a few of the options available to respond to this growing need. University libraries also provide classroom space for bibliographic instruction and office space for individual consultation by librarians or other information support staff.

Fister (2004) identified a number of student trends contributing to changes in academic libraries including the fact that even though most students own computers, they prefer to work and study on campus instead of their dorms and, despite many electronic options, they prefer face-to-face contact with a reference librarian when seeking information (p. 2). These are just two reasons why the information commons has been so successful.

For decades, many university libraries focused on acquiring materials with little effort toward finding out what patrons really wanted in terms of service. Now, there is a trend away from the collection-centered library toward the user-centered library with the information commons at the heart of this movement. The focus today is on computing, comfort, and collaboration, and on fostering information and computer literacy, i.e. teaching students self-sufficiency in library research and the use of technology. Academic librarians are also paying close attention to three major trends among information consumers, especially undergraduates. As identified in The 2003 OCLC Environmental Scan, these are self-service, satisfaction, and seamlessness. The IC movement supports all of these trends by encouraging and supporting user-initiated information seeking behaviors; integrating digital resources; and providing a wide variety of services in a convenient location.

III. Definitions and models

Models. Even though the information commons is now a mainstream service in U.S. academic libraries, the realization of the concept varies from library to library. In its earliest form, an information commons was a computer lab, a place for students to write papers or a computer program. Later those labs incorporated Internet access, e-mail, and a variety of software packages. While some information commons projects still focus on technology and little else, increasingly today's information commons offers much more including help from librarians and technology specialists as well as web sites of library and technology resources. Some involve collaboration with other campus information-related departments. The information commons is most likely located in the library, though some have freestanding facilities or are found in other buildings on campus. A small, but growing number are open 24 hours a day.

The various models of the information commons have been well addressed in the literature. Beagle (1999), one of the most cited authors on the topic, presented two distinct concepts for the information commons:

1) An exclusively online environment in which the widest possible variety of digital services are available via a single graphical user interface and potentially searched in parallel via a single search engine from any networked workstation. Its content includes both library collections and other digital materials. The model is an enhanced, integrated web site with sophisticated searching, help, and results.

2) A new type of physical facility or area specifically designed to organize workspace and service delivery around the integrated digital environment. The space could be a department or floor of an academic library or a separate physical facility. It incorporates the first model (virtual) and adds staffing and new services while creating a new information environment (p. 82).

Bailey and Tierney (2002) further refined Beagle's IC models into three types: 1) the *macro-commons*, the world of information, especially digital, available via the Web; 2) the *micro-commons*, an area "with a high concentration of computer/digital technologies, peripherals, software options, and network infrastructure;" and 3) a more *integrated commons*

in which research, teaching, and learning activities take place within a specific area and with a strong emphasis on digital information (p. 277). The latter model has found favor with many libraries which combine computer technology with library resources, supported by specialists who can answer any type of information-related question. The focus of this paper is the integrated information commons, a model which continues to grow and evolve in terms of services and goals.

Partnerships. As noted above, many libraries have expanded upon the basic integrated IC model by entering into partnerships with other campus units which focus on information, technology, and learning. As the needs of students and faculty expand to require many different resources for research, information retrieval, class presentations, and training, it is sensible for the library to collaborate with related university departments in the information commons effort. Frequent partners are information technology units, writing centers, media production groups, and faculty development centers. Whatever the combination, the goal is to provide one-stop shopping for users, a convenient location to obtain assistance with problems and projects while having access to the latest technology and a multitude of digital resources. Before the creation of the TCU Information Commons, students would come to the library for computer help, not realizing that that expertise lay elsewhere on campus or because the computer center help desk was then an 8 a.m. to 5 p.m. operation. There was also uncertainty as to where to get help with audiovisual and multi-media projects. The creation of the IC at TCU has addressed this situation and, in doing so, has fostered collaboration among related but distinct university departments, providing centralized, synergistic service for students and faculty alike. In such an environment, the student doesn't have to distinguish between types of information questions and determine where to go and who to ask.

Kratz (2003) noted another advantage to the cooperative approach: "links to other campus users and units help fight the marginalization of libraries..." (p. 101). In addition to the core function of providing and utilizing all types of information, the IC is a place for learning about and using information technology; for developing new tools for retrieving and manipulating data; for testing new software; and for developing new applications for hardware and software in the academic environment. There may be other roles as well: fostering faculty development, creating community and corporate partnerships, and supporting interdisciplinary studies.

Characteristics. One could summarize the basic tenets of the integrated information commons as 1) ubiquity (every machine has a common interface and access to the same software and e-resources); 2) utility (aimed at meeting the needs of all users); 3) flexibility (responsive to changing needs and developments in technology); and 4) community (a comfortable, central location conducive to collaboration). Indeed, the latter is one reason that the IC is so popular at many universities. The vast majority of students come to school with a computer nowadays, but they prefer a central location with a variety of resources where they can *work together*. Students have also responded positively to access to state-of-the-art computing with high-speed, color printers, scanners, large, high-resolution monitors, and a variety of software packages not found on their own PC. They like having expert help from both librarians and technical specialists, the long hours that many information commons are open, and the fact that many libraries allow them to bring beverages and snacks to the workstation. Thus, the information commons has contributed to the revitalization of the academic library which instead of disappearing as some had predicted, is stronger than ever.

MacWhinnie (2003) described the information commons has having "collaborative learning spaces, multimedia workstations, hi-tech classrooms, and group study spaces. These features are designed to enhance group learning, to encourage faculty to incorporate technology and new information resources into their curriculum, and to provide a technologically advanced setting for conducting library instruction" (p. 244). Many ICs also incorporate the reference collection so that users have ready access to both print and online research materials. Ultimately, however, the information commons is all about ensuring the academic success of our students, and it "reinforces the University's need for a 'commons', i.e. a place of open and equal access to information resources and services for all students and staff" (Wainwright, 2004, p. 2).

In summary, the goals of the information commons, no matter the model, are

- Convenience (centralized, one-stop shopping for information needs and learning)
- Expertise (help from librarians, computer consultants, media specialists, etc.)
- Access to the latest technology (hardware, software, multimedia, network access)
- Collaboration (an environment for group study and learning) and

- Information and computer literacy (learning to find, evaluate, and use information)
- Knowledge management (the tools and assistance for learning to use them)

IV. Planning the Information Commons

Need. A number of questions must be answered when planning and implementing an information commons beginning with "why do students come to libraries?" Of course, the standard reasons still apply: to read, study, conduct research, and do homework. MacWhinnie (2003) expanded on this point: "Academic libraries are a refuge for those who live in noisy dorms or need a place conducive to study. In addition...libraries are natural gathering places for groups to study and provide social space for students to meet between classes. These features will be more important in the future as remote access to information isolates users and students seek learning and social spaces where they can interact with others" (p. 243).

The information commons attempts to meet these requirements, but in the larger context of today's academic, library, and technological environments. It builds upon the aforementioned requirements for study space and group interaction by offering a wide variety of services, ready expertise supporting all types of information needs, a range of spaces to accommodate different learning and research styles, and abundant computer technology, all presented in a comfortable, people-centered environment. Most, if not all, of these features must be present for success, to create what we call in the U.S., a "destination," an exciting and stimulating place where students and faculty want to be. In the end, for this to happen, there must be consultation with stakeholders, both users and staff, in order to determine needs and decide upon a structure that best meets those needs.

Content. In both planning and ongoing operations, there must be a decided focus on content because without ample electronic resources, the information commons is no more than an elaborate computer lab. Academic library users want a wealth of electronic journals and books, bibliographic databases, image files, finding aids, and Web access to do research. E-content coupled with productivity and presentation software, high-end workstations and printers, and multimedia equipment and production software, are the essential tools for study and research. Librarians and other information colleagues must continually grow, manage, and monitor their library's e-content, as well as its print, microforms, and multimedia, to ensure that user needs are being met and that the information commons offers the tools for achieving student information literacy and knowledge management goals.

Services. Librarians have always been challenged to serve and assist a wide range of patrons with varying skills, knowledge, interest, and degrees of self-sufficiency. In the information commons context this becomes more complicated as technology and online sources are added to the mix. Beagle (1999) pointed out that "the challenge of the Information Commons is to devise a continuum of service that provides the user with skilled staff consultation and an array of technological options for the identification, retrieval, processing, and presentation of information in a variety of formats" (p. 86). In planning for an information commons, therefore, it should be clear that old service patterns no longer apply and librarians must be creative and flexible in finding an appropriate mix of services and staff support that meet local needs. Beagle also observed that students are less well served by the traditional reference desk model where information is handed to users and better served by "an integrative, dynamic model that contextualizes information and that creates collaborate workspaces where group process can shaped knowledge in ways that parallel the large-scaled evolution of knowledge in the culture around us" (p. 88).

Space. Space considerations are a key to planning a successful information commons project. As noted earlier, the IC must take into account and accommodate different learning styles and study habits. At TCU, this has been conceptualized by Koelker (**Figure 1** below) who utilized a grid to illustrate the range of needs including a) quiet space for individuals with computing (usually accomplished with laptops and a wireless network); b) quiet space for individuals without computing (so-called "clickless" study areas); c) noisy group space with access to computing; and d) noisy group space without the need for computing. Usually the areas allowing conversation occur within the information commons space itself, while space for quiet work is often in designated stack areas or reading rooms.

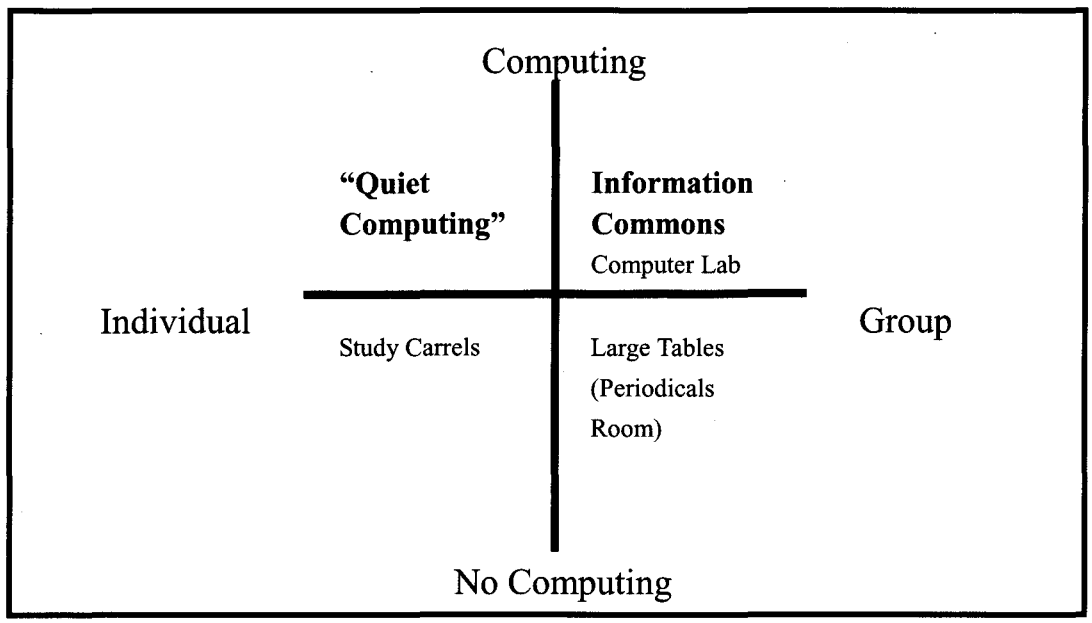

Figure 1

The space given to IC computer labs is another important consideration. Many libraries have squeezed in as many PCs and Macs as possible to meet demand, but that usually results in just enough room at each machine for one user and little space to spread out materials. Therefore, if possible, IC workstations should have room for two chairs and ample work surface around the computer. Given the propensity for group and team projects these days, there is also a need for collaborative computing workstations accommodating three to six persons comfortably around a table with a computer and one or two monitors.

Stakeholder involvement. If the information commons is to be a jointly operated service with other campus units, it is important to involve personnel from those other areas in the initial planning and ongoing management. At TCU, a steering committee of library, computer center, and instructional technology staff was appointed and given the charge to plan services, recommend a physical layout, suggest a staffing model, outline training, and more. The TCU Information Commons is now jointly staffed with library and computer center personnel and is overseen by a management team of high-level supervisors from both areas. Major issues are brought to the Dean of the Library and the Assistant Provost for Information Services for their review, feedback, and approval. In the real world, because many possible administrative models exist, great care needs to be taken in planning, sharing expectations, and goal setting. It is also important to remember that the information commons, like a web site, is always a work in progress, a service which is evolving continually with changes in technology, service patterns, and user needs. It requires ongoing assessment and fine-tuning to ensure that the service both meets user needs and is responsive to staff concerns.

Personnel. Staffing is a critical planning and operational consideration. The typical information commons will have a number of persons working at the help desk, answering phones and responding to problems. TCU uses a combination of student assistants trained in the basics of library and computer skills; full-time computer consultants with a technical expertise; and librarians and support staff. A tiered service approach may be utilized with students on the front of the desk and the library and computer center staff seated immediately behind, available for the more difficult questions. In this model, patrons may approach a librarian directly if they wish (often the option chosen by faculty). On the other hand, students don't mind, in fact prefer, asking a question of a peer first. Some information commons projects have separate desks for computer help and library assistance, though this is not as desirable as a combined help desk which eliminates the confusion of which place to go to for assistance. Still other models incorporate an information desk as a first point of contact where students and staff answer very basic questions and refer more complicated requests to specialists at another desk or in private offices. Obviously, the local environment will dictate the staffing pattern. Whatever the model, as Bailey and Tierney (2002) point out, "the Commons staff meets the patron's need somewhere along the continuum from 'first-response' to 'extensive consultation'" (p.282).

Training. Training is essential in the IC environment because both staff and students are required to know both the library and computer worlds at least at a basic level. With frequent student assistant turnover, it is imperative to have regular training and re-training at the start of the academic year. This is important for staff and specialists, too, because of the ongoing changes in technology and online library resources. Halbert (1999) wrote that the Information Commons requires a variety of skills, library and computer: "traditional reference staff will require new training and skills to be effective....Emory librarians have stretched in new directions, taken on new responsibilities, and developed many new views about what students might like to do in a library" (p. 91).

Change. Like the academic library world at large, the information commons is evolving and transforming. New technology, new possibilities for partnerships, and changing user needs require that staff view the IC as a "work in progress." In that regard, the information commons is not unlike a web page which is perpetually "under construction. " With things constantly in flux, there is a need for regular fine-tuning of services, hardware and software, physical layout, etc. At TCU, in its three years of operation, the IC has had three different arrangements for the help desk including where staff sit and where phones are located, regular turnover in student and technical staff, a dramatic increase in laptop use, and an overall steady increase in business. All this points to the importance on ongoing assessment (see section VI below), careful attention to problems and changing needs, and most of all, flexibility.

V. Issues and challenges to the success of the Information Commons

Issues. Despite the advantages and successes of the information commons in today's academic library, it is not a simple thing to implement. As one IC veteran noted, "building it is easy, managing it is difficult." In fact, there are many challenges to overcome and many never go away completely. These include 1) **management issues** such as merging and supervising staff from two or more distinct institutional units, lines of communication, and assessment; 2) **personnel issues** such as cross-training, pay scales, turnover, and scheduling; 3) **service issues** such as hours of operation, staffing, physical arrangement, tiered-service vs. traditional, and keeping up with changes in e-resources; 4) **public relations issues** such as promotion and user interaction; 5) **budgeting issues** such as replacement costs for equipment, database and full-text license fees, upgrading software, hardware maintenance, and whether or not to charge for printing; and 6) **technical issues** such as system security, administrative privileges, image refreshing, maintenance of equipment, etc.

Challenges. In the integrated information commons model, the greatest challenge may be the joining of two very different cultures, those of the library and the computer center. Simply stated, librarians tend to be people-centered with a strong service orientation, less concerned about statistics and turnaround time than answering questions and teaching users how to do research on their own. Our technical colleagues, on the other hand, are problem-oriented people, used to sitting in cubicles in front of a computer, talking on the phone, working independently. When the IC brings these two groups together, there are many challenges. Joan Frye Williams (2003) said it best: "They're from Mars, We're from Reference."

The first issue that arises from this unnatural union is the expectation by management that the librarians learn more about technology and the computer people become familiar with the library and research. There is often great resistance to this idea, partly because of human nature's resistance to change, and partly because the staff fear making mistakes and looking foolish if they can't answer a technical or library question. As a result, even after training and encouragement, library staff will refer even simple technical questions to computer staff and vice-versa. The library administration needs to be patient and sensitive to staff resistance and reluctance, provide encouragement and support, and offer an opportunity for regular feedback and input on this and other thorny issues. Involving as many staff as possible in the planning of the IC will help alleviate the resistance problem to some extent. In time, hopefully staff will see that the new work is not that difficult and in fact may be stimulating. On a positive note, now that technical people are present at the same desk, reference librarians have more time to focus on research type questions instead of worrying about printers and helping students with passwords or technical problems.

Besides the basic resistance to change, another challenge is the matter of training and re-training to keep skills fresh, skills that may only occasionally be used. This especially applies to student assistants since they are often expected to be totally "bi-lingual," i.e. speaking library and computerese. And because students tend to have high turnover, a very strong training program each semester is critical. This should be developed and carried out by both library and technical people.

MacWhinnie (2003) pointed out other training challenges: "Training must keep pace with technology changes and system upgrades. Adequate training can involve a great deal of time and money, which are often in short supply in busy, under funded academic libraries" (p. 244). Bailey and Tierney (2002) underscored the importance of training to the functional success of the IC desk and to creating a team spirit among staff: "to train effectively, it is important that a responsible person or group...create and describe the requisite competencies and skills for Information Desk staff" (p. 282).

In the final analysis, because the information commons will succeed or fail depending upon the staff, great attention must be given to personnel issues. The bottom line is that all parties have to be committed to its success and help make it work. Regular meetings with opportunity for input and participation in decision-making will help significantly. Managers must make sure that all staff, both from the library and computer center are seen as important players on the same team and are included in all meetings, committees, parties, and so on.

VI. Need for ongoing assessment

Evaluation and learning outcomes are the watchwords in early 21st century higher education as both public and private institutions are increasingly accountable to funding agencies, stakeholders, and the public. Assessment is not only important to prove one's worth, but also serves as a reality check to make sure that things are going well and that the institution is meeting goals and expectations. Academic libraries are expected to assess their programs, too, and a number of methods may be used to evaluate service, collection, access, and facilities. User surveys, focus groups, formal outcomes assessments, and standardized tools such as LibQUAL (www.libqual.org) are all used to obtain user feedback. In the TCU information commons, staff regularly conduct surveys, general and targeted, to determine effectiveness and patron satisfaction data. Staff also utilize the HEAT® Service & Support™ software (http://www.frontrange.com/heat/heat64.asp) to log calls and computer problems, monitor staff responses and turnaround time, and measure the success of service-level agreements. HEAT can also be used to create a web accessible knowledge base for answering patron questions.

But perhaps traditional methods of assessment do not always apply to the information commons with its multiple features and widely varying models. "The IC is a new model that extends service delivery beyond the scope of the traditional library and will therefore require new methods of assessment to determine its effectiveness" (MacWhinnie, 2003, p. 251). Despite these difficulties, evaluation should not be ignored since data can be used to gain support for operations and equipment.

Whatever evaluation tools are utilized, it is important to assess the information commons on a regular basis to ensure that user needs are being met. More than any other library service today, the IC is dynamic, complex, and user/use-intensive, requiring close and regular scrutiny. Bailey and Tierney (2002) noted that "clear and effective evaluation and assessment are requisite components of any academic service area and have direct implications for funding" (p. 282-83). TCU has emphasized evaluation of its commons project, but has not limited itself to feedback from users. In 2003 the library conducted a survey of IC staff, librarians and technical personnel, to determine how service and workflow could be improved. This inquiry resulted in a wide variety of useful suggestions that were subsequently implemented including creating a separate phone center to reduce noise at the IC desk; strengthening the student training program; and initiating plans for a collaborative computing area.

VII. Knowledge management and the information commons

The preceding overview of the information commons and its place in academic libraries is a necessary prerequisite to the discussion of the IC's role in a college and university student's knowledge management skills. By understanding the goals, structure, and components of the information commons, we can better see how it facilitates the creation, dissemination, and utilization of knowledge by students, as well as the development of information literacy skills. This process is important since students come to college without basic research skills and lacking in critical thinking, decision making, and self-directed learning (Rockman, 2004). Before they graduate, they must acquire these abilities in order to become knowledge managers and discriminating information consumers.

Definitions. In discussing knowledge management (KM) in the context of the information commons, it is first helpful to understand what is meant by knowledge management, although as Santosus and Surmacz (2004) noted,

"there's no universal definition of KM, just as there's no agreement as to what constitutes knowledge in the first place" (p. 1). While a great number of knowledge management definitions come from the business literature where the focus is on the creation and use of information in the for-profit sector. Nevertheless, some corporate definitions may be successfully applied to higher education and their libraries. For example, the Delphi Consulting Group defines KM as "the systematic management and use of the knowledge in an organization" (www.ktweb.org/rgloss.cfm). Another online glossary supports this view: "a concept in which an enterprise gathers, organizes, shares, and analyzes its knowledge in terms of resources, documents, and people skills. Knowledge management involves data mining and some method of operation to push information to users" (www.discoverit.co.uk/glossary/full_f-k.htm).

A more apt definition for academic libraries might be "KM involves the creation, dissemination, and utilization of knowledge" (www.commerce-database.com/knowledge-management.htm). This particular explanation finds a parallel in the academic library information literacy movement. Stratigos (2001) took this idea further: "ultimately, KM is about continuous learning. And continuous learning involves people actively engaging with information and knowledge, then applying it" (p. 65). The information commons, with its computer labs, Internet connections, electronic resources, and information specialists, provides the tools need for students to acquire information and turn it into knowledge, knowledge which enhances their understanding of the world around them and prepares them for the future. Brewer, et al. (2004) pointed out that beyond the basic information literacy skills of finding and evaluating information, "students need to synthesize and analyze information to create new knowledge." They described this set of life-long learning skills as "information fluency" (p. 11).

Environment. The information commons is the perfect environment for the creation of knowledge since "the creation of new knowledge is a socially negotiated process. Communities share ideas, work out differences, take sides, split into camps, agree to discard concepts that no longer work, and try out new ones to see how they fit" (Fister, 2004, p. 2). The IC community is where social and intellectual interaction take place and where ideas can be exchanged, discussed, and modified, all part of the knowledge management process. Why is it that the information commons is the most likely place on campus for knowledge creation and why do students prefer library computers when there are other computer labs on campus? Fister (2004) pointed out that the resource-rich environment and social atmosphere is the reason for the IC's popularity (p. 3). And it is that resource-rich environment that leads to the development of information literacy and knowledge. In today's academic library, there is increasing demand for access to information available in multiple formats and tools that can be used to incorporate information into a work product (MacWhinnie, 2003, p. 241), an appropriate description of the information commons environment.

Library space allocated for the creation of knowledge is a common theme explored in the literature. Henshaw (1994) stressed the need to provide space for collaboration among students, faculty, librarians and IT people working together to create "knowledge services" (p. 284). In its original proposal for an information commons at the University of Toronto, planners envisioned a place where "students, faculty, researchers, and staff can come to find out about information technology, to learn how to make us of it, and to actually use and develop appropriate tools to retrieve and manipulate information" (Biderman, 1992). Bennett (2003) argued that libraries should be designed to advance learning and teaching. He advocated the establishment of the "learning commons" which has different goals from the information commons: "the core activity of the learning commons would be...the collaborative learning by which students turn information into knowledge and sometimes into wisdom."

Finally, the IC is a place where information is retrieved and used to create knowledge, where students become information literate and ultimately knowledge managers. This idea is supported by Stratigos (2001) who referred to college students as "tomorrow's information workers" who use a multiplicity of options for finding information and putting it to work. In her analysis of student perceptions of information she noted, among other things, that the library is the campus content aggregator and therefore the best way to gain the attention of undergraduates in terms of information seeking. The information commons, with its emphasis on content and access, is the ideal incubator for knowledge management and the preparation of "tomorrow's information workers" (p. 66-67). Beagle (1999) pointed out that "Library work in the future will increasingly become that of contextualizing information for users, because it is through contextualization that information becomes knowledge" (p. 88).

VIII. Conclusions

A new service model, the information commons, has emerged in the past decade as a conventional feature of the U. S. academic library. Libraries of all types and sizes are embracing this new model which is responsive to the needs of today's (and tomorrow's) student and which fosters information literacy and contributes to the development of knowledge management skills. Indeed, the IC has become so successful, so popular with students that some universities, for example Indiana University and the University of Southern California, have created more than one. Libraries can use this popularity to leverage "the library's centrality of place and typically long hours of service, permitting institutions to build large, attractive facilities for student research, study, and collaboration" (Brewer, et al., 2004, p. 12).

MacWhinnie (2003) saw the future academic library with the information commons at the core: "It will be a constantly evolving information resource with knowledgeable and skilled staff that provides fast, flexible access to digital and print information resources, fosters scholarly research in a comfortable and supportive environment, and promotes cooperative learning. The IC is a first step in that direction" (p. 254). The information commons a dynamic service model which creates a synergy among library staff, computer specialists, media people, and users of all types. Its creation requires careful planning, involvement by stakeholders, and thinking in non-traditional ways. Its success requires visionary leaders willing to collaborate with related campus units, to listen to users, and to embrace change. Indeed, the information commons underscores "...that the future of the academic library lies in how well it meshes with a whole range of related services" (Wainwright, 2004, p. 2), many of which are not traditional library offerings. The information commons adds value to traditional services and embraces the idea that cooperation and innovation are our future in academic libraries.

REFERENCES

Bailey, R., and Tierney, B. (2002). Information commons redux: concept, evolution, and transcending the tragedy of the commons. *The Journal of Academic Librarianship* 28, 277-286.

Beagle, D. (1999). Conceptualizing an information commons. *The Journal of Academic Librarianship* 25, 82-89.

Bennett, S. (2003). *Libraries Designed for Learning*. CLIR Publication 122. Council on Libraries and Information Resources, Washington, DC. http://www.clir.org/pubs/reports/pub122/contents.html

Biderman, B. (1992). Proposal for a University of Toronto "Information Commons": *Information Technology Made Visible and Accessible*. University of Toronto Instructional Research and Computing.

Brewer, J. et al. (2004). *Libraries Dealing with the Future Now*. ARL Bimonthly Report 234. Association of Research Libraries, Washington, DC.

Carlson, S. (2001). The deserted library. *The Chronicle of Higher Education* **Nov. 16, 2001**, A35-38. (http://chronicle.com/free/v48/i12/12a03501.htm).

Fister, B. (2004). Common ground: libraries and learning. *Library Issues: Briefings for Faculty and Administrators* 25 (1), 1-4.

Frye Williams, J. (2003) "They're from Mars, We're from Reference—Bridging the Culture Gap Between Library and Technical Personnel." Speech made at the ACRL 11th National Conference, Charlotte, NC, April 10-13, 2003.

Halbert, M. (1999). Lessons from the information commons frontier. *The Journal of Academic Librarianship* 25, 90-91.

Henshaw, R. (1994). The library as a place. *College & Research Libraries* 55, 284-286.

Koelker, J., and Bobich, M. (2004). Texas Christian University's information commons. Presentation made at the Leavey Library 2004 Conference: Information Commons: Learning Space Beyond the Classroom (University of Southern California), Los Angeles, September 16-17, 2004.

Kratz, C. (2003). Transforming the delivery of service: the joint-use library and information commons. *College & Research Libraries News* 64, 100-101.

MacWhinnie, L. (2003). The information commons: the academic library of the *future*. *Portal* 3, 241-257.

Morris, J. (2002). The college library in the new age. *University Business* 5 (October), 26-29.

Rockman, I. (2004). The impact of information literacy on teaching and learning. Presentation made at the Leavey Library 2004 Conference: Information Commons: Learning Space Beyond the Classroom (University of Southern California), Los Angeles, September 16-17, 2004.

Santosus, M., and Surmacz, J. (2004). *The ABCs of Knowledge Management.* Knowledge Management Resource Center. http://www.kmresource.com/

Stratigos, A. (2001). Knowledge management meets future information users. Online 25 (**Jan./Feb.**), 65-67.

The 2003 OCLC Environmental Scan: Pattern Recognition. OCLC Online Library Computer Center, Inc., Dublin, OH. http://www.oclc.org/reports/2003escan.htm

Wainwright, E. (2004). People, networks, books: new strategies for university academic information and service delivery. Paper delivered at the 2004 meeting of the Australian Library and Information Association, Queensland, Australia, September 21-24, 2004.